

CLAIMS:

1. Safety device for monitoring a movable element, in particular, for elevators and preferably for arrangement on an elevator car, comprising a speed determination unit for determining the speed of the movable element, a comparator device for comparing a predetermined speed with the determined, actual value and a triggering unit for triggering a braking device,  
wherein the safety device comprises in addition a distance determination unit for determining the distance of the movable element in relation to a stationary or movable target, wherein the comparator device comprises a memory for storing a maximum admissible speed and at least one nominal distance with, in particular, an associated nominal speed,  
wherein the comparator device compares first of all the greatest stored nominal distance with the actual distance indicated by the distance determination unit and when the distance is the same compares the nominal speed associated with the nominal distance with the actual speed registered by the speed determination unit at this point of time and when the nominal speed is exceeded causes the triggering unit to emit an electronic triggering signal, and wherein the intelligent comparator device continuously compares the maximum admissible speed with the actual speed irrespective of nominal distances and when the maximum admissible speed is exceeded likewise causes the triggering unit to emit an electronic triggering signal.

2. Safety device as defined in claim 1,  
wherein the speed determination unit comprises a pulse counter  
registering the codings on an encoder disc driven with the speed to be  
registered via a friction wheel or a cable.
3. Safety device as defined in claim 1,  
wherein the distance and/or speed determination unit comprises radar and/or  
laser sensors.
4. Safety device as defined in claim 1, wherein the safety device  
comprises in addition a position determination device for determining the  
position of the movable element to be monitored by the speed  
governor and/or a direction indicator for determining the direction of  
movement.
5. Safety device as defined in claim 1,  
wherein the distance determination device, the position determination device  
and/or the direction indicator use and/or exchange with one another  
the data generated by the speed determination unit.
6. Safety device as defined in claim 1, wherein the memory is able to  
store nominal distances with a respectively associated nominal speed as a  
function of the destination, wherein the comparator device is given the  
destinations and in accordance with the destination reads out the  
dependent nominal distances with associated nominal speeds for the  
nominal-actual comparison and doubles the nominal distance in the  
case of two cars traveling towards one another in the same shaft.

7. Safety device as defined in claim 6,  
wherein the distance determination device is designed such that it is able to register the position, direction and the distance of the car in relation to a stationary or movable target, wherein in addition safety distances with associated maximum speeds stored in the memory are called up dependent on the destination, the triggering signal being activated when said safety distances are exceeded.
8. Safety device as defined in claim 1, wherein the triggering unit comprises in addition a pyrotechnical final control element, said element being triggered by the electronic triggering signal.
9. Safety device as defined in claim 8,  
wherein the pyrotechnical final control element comprises a tube with a built-in thrust or pressure piston and at least one, preferably several, explosive charges ignitable electrically, in particular, individually as well as, in particular, a sensor reporting the actuation.
10. Safety device as defined in claim 8,  
wherein the pyrotechnical final control element is integrated in a housing with the speed determination unit, the distance determination unit, the comparator device, the position determination unit and/or the triggering unit or in the braking device to be actuated, in particular, in a safety gear for elevators.
11. Safety device as defined in claim 1, wherein the safety device is constructed with at least two stages, namely in such a manner that at least one additional speed governor unit with an at least independent speed determination unit and comparator device is provided.

12. Safety device as defined in claim 11,  
wherein the additional speed governor unit is formed by a conventional  
mechanical speed governor driven, in particular, by a cable, said  
governor monitoring and limiting the absolute maximum speed.
13. Safety device as defined in claim 12,  
wherein the triggering unit comprises a rocker means for triggering a braking  
device activated, on the one hand, by means of the mechanical speed  
governor unit and, on the other hand, by an electrically actuatable final  
control element.
14. Safety device as defined in claim 1, wherein the safety device  
comprises in addition a data transmitting and/or receiving unit exchanging  
data, in particular, position and movement data with an external  
information system, in particular, a shaft information system  
preferably with position sensors in the elevator shaft or adjacent safety  
devices.
15. Safety device as defined in claim 1, wherein it comprises as part of the  
braking device to be triggered by the triggering unit safety gears arranged in  
parallel and/or serially and/or instantaneous safety gears for both  
directions of travel.
16. Safety device as defined in claim 1, wherein it comprises in addition a  
test device, the safety device being able to trigger the braking device as a trial  
in a predetermined position and/or speed of the movable element to  
be monitored with the activation of said test device.
17. Safety device as defined in claim 1, wherein the triggering unit is  
adapted to be activated in a remote-controlled manner, wherein, in

particular, a second rocker means is provided for the remote triggering, said rocker means being offset, in particular, through 180°.

18. Safety device as defined in claim 1, wherein the safety device has in addition a backup memory saved, in particular, separately, all the data relevant to safety being stored in said backup memory, in particular, changing data being updated at intervals.
19. Safety device as defined in claim 1, wherein the safety device comprises an emergency supply of energy, in particular, a battery.
20. Safety device as defined in claim 1, wherein the safety device comprises in addition a storage unit for operational data for storing manifold operational data, in particular, also the number of triggering commands to the pyrotechnical final control element.